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EXAMINER

GILLIS, BRIAN J

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/725,738	Applicant(s) RAI ET AL.	
	Examiner Brian J. Gillis	Art Unit 2441	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,7-18,21-47,53 and 55-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3,7-18,21-47,53 and 55-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 25, 2009 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 71-76 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 71 recites the limitation "the server capability information" in lines 5 and 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 71 recites the limitation "the distribution" in lines 8-9. There is insufficient antecedent basis for this limitation in the claim.

Claim 73 recites the limitation "the server capability information" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

As for claims 72-76 which claims dependency from claim 71, these claims are rejected under 112 second paragraph per the rationale of claim 71.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 14-18, 21-47, 60-66 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim(s) 14-18, 21-47 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The claimed methods are broad enough that the claims could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Claims 60-66 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed computer program product is software per se. Please refer to MPEP 2106.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 8-10, 13-18, 21, 23, 25-30, 33-45, 47, 53, 55, 56, 58-60, 62, 63, 65-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al (US PG PUB US2002/0032777) in view of Schlangen (US PG PUB US2005/0091217).

Claim 1 discloses a computer readable storage medium storing one or more routines executable by a computer processor, the routines comprising: one or more load balancing routines that collect proportional server capability information for a plurality of servers, wherein the proportional server capability information is based at least in part on processing of sample requests transmitted to the plurality of servers during intervals; wherein the one or more load balancing routines encode the collected proportional server capability information in a weighted distribution that represents the plurality of servers in a weighted manner based at least in part on the proportional server capability information and wherein the one or more routines further randomly select servers to

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process client requests from the weighted distribution. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach wherein the one or more load balancing routines encode the collected proportional server capability information in a weighted distribution that represents the plurality of servers in a weighted manner based at least in part on the proportional server capability information and wherein the one or more routines further randomly select servers to process client requests from the weighted distribution. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28) and randomly selects a server from the weighted distribution (paragraphs 29-32).

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 3 discloses the computer readable storage medium of claim 1 wherein the load balancing of client requests comprises selection of entries from the proportional server capability encoding, wherein each entry indicates at least one of the plurality of servers. Kawata et al further teaches a server is chosen from the list of collected information (paragraphs 66 and 67).

Claim 8 discloses the computer readable storage medium of claim 1 wherein the sample requests include a mixture of configurable directory requests. Kawata et al further teaches the service requests contain various content (paragraph 39).

Claim 9 discloses the computer readable storage medium of claim 1 wherein the server capability information includes one or more of proportion of serviced sample requests, time to serve each sample request, time to serve total sample requests, proportion of sample request types serviced, and time to serve sample request types. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 10 discloses the computer readable storage medium of claim 1 wherein the one or more load balancing routines update a proportional server capability based load balancing encoding in accordance with the collected server capability information. Kawata et al further teaches the load management table is updated as requests are serviced (paragraph 40).

Claim 13 discloses the computer readable storage medium of claim 1 embodied in one or more of cache, registers, memory, and fast look-up tables. Kawata et al further teaches the load balancer is stored on computer readable storage medium (paragraph 104).

Claim 14 discloses a method comprising: during intervals, collecting data that reflects proportional capabilities of a plurality of backend servers, wherein the backend server capability data is based at least in part on servicing of sample requests by the plurality of backend servers; and encoding the collected backend server capability data

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to reflect proportional backend server capability of each of the plurality of backend servers. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach encoding the collected backend server capability data to reflect proportional backend server capability of each of the plurality of backend servers. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28)

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 15 discloses the method of claim 14 wherein the collected proportional backend server capability data is encoded to indicate each of the plurality of backend servers in accordance with their proportional capability based at least in part on the collected backend server capability data. Kawata et al further teaches a load balancer generates capability information based on the measured load of the servers (paragraphs 75 and 76).

Claim 16 discloses the method of claim 14 further comprising updating the encoding in accordance with the collected data. Kawata et al further teaches the load management table is updated as requests are serviced (paragraph 40).

Claim 17 discloses the method of claim 14 further comprising load balancing client requests in accordance with the encoding. Kawata et al further teaches requests are distributed to the servers accordingly (paragraphs 66 and 67).

Claim 18 discloses the method of claim 17 wherein the load balancing comprises randomly selecting entries from the encoding, wherein the encoding includes entries that indicate the plurality of backend servers. Schlangen further teaches randomly selecting a server from the weighted distribution (paragraphs 29-32).

Claim 21 discloses the method of claim 14 wherein the collected backend server capability data includes one or more of proportion of sample requests serviced by each of the backend servers, time for each of the backend servers to serve each sample request, time for each of the backend servers to serve total sample requests, proportion of sample request types serviced by each of the backend servers, and time for each of the backend servers to serve sample request types. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 23 discloses the method of claim 14 wherein the sample requests include sample directory requests. Kawata et al further teaches the service requests contain various content (paragraph 39).

Claim 25 discloses the method of claim 14 executed by a computer processor reading a computer program product encoded on one or more machine-readable media.

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Kawata et al further teaches the method is stored on computer readable medium (paragraph 104).

Claim 26 discloses a method comprising: load balancing client requests across a plurality of servers in accordance with a proportional server capability information encoding that reflects proportional capabilities of the plurality of servers in relation to the capabilities of all the servers collectively, wherein the reflected proportional server capability information is based at least in part on servicing of sample requests by the plurality of servers. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83), and a server is chosen based on the load status of the servers (paragraphs 66 and 67). It fails to teach encoding that reflects proportional capabilities of the plurality of servers in relation to the capabilities of all the servers collectively. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28)

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

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Claim 27 discloses the method of claim 26 wherein encoding reflects frequency of sample requests serviced by the servers. Kawata et al further teaches a load balancer generates capability information based on the measured load of the servers (paragraphs 75 and 76).

Claim 28 discloses the method of claim 27 wherein the frequency of sample requests serviced includes one or more of number of sample requests serviced during a time interval, number of sample requests serviced during a time interval based on type of sample requests, time to service a number of sample requests, and time to service a number of sample requests based on type of sample requests. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 29 discloses the method of claim 26 further comprising maintaining the proportional server capability information encoding. Kawata et al further teaches the server information is updated as conditions change (paragraph 56).

Claim 30 discloses the method of claim 26 further comprising the proportional server capability information at intervals between servicing of client requests. Kawata et al further teaches the server information is updated between servicing requests (paragraph 56).

Claim 33 discloses the method of claim 26 wherein the encoding includes a data structure that proportionally represents the plurality of servers in accordance with the proportional server capability information. Schlangen further teaches the weighted distribution stores the proportional information on the server's available resources (paragraphs 16-28).

Claim 34 discloses the method of claim 33 wherein the load balancing comprises selecting entries from the data structure at random. Kawata et al further teaches the selection is based on a round robin or pseudo-random fashion (paragraph 67).

Claim 35 discloses the method of claim 34 wherein the load balancing comprises predetermined selection of entries from the data structure. Kawata et al further teaches the selection is based on a round-robin fashion which selects in a sequential order (paragraph 67).

Claim 36 discloses the method of claim 26 executed by a computer processor reading a computer program product encoded in one or more machine-readable medium. Kawata et al further teaches the method is stored on computer readable medium (paragraph 104).

Claim 37 discloses a method comprising: during a data collection interval, transmitting sample requests to servers, recording data that corresponds to servicing of the transmitted sample requests by each of the servers; and encoding the recorded data, wherein the encoding of the data proportionally represents each of the servers in accordance with their proportional server capability based at least in part on the recorded data. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach wherein the encoding of the data proportionally represents each of the servers in accordance with their proportional server capability based at least in part on the recorded data. Schlangen teaches collecting the proportional information on the

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server's available resources and inputs it into a weighted distribution (paragraphs 16-28).

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 38 discloses the method of claim 37 wherein the encoding includes a load balancing table, and wherein a proportion of entries for each server in the load balancing table exist in accordance with the proportional server capability of each server. Kawata et al further teaches a load management table is used to store the collected data (figure 1, #104).

Claim 39 discloses the method of claim 38 further comprising randomly selecting entries from the load balancing table to load balance client requests across the servers. Kawata et al further teaches the selection is based on a round robin or pseudo-random fashion (paragraph 67).

Claim 40 discloses the method of claim 38 further comprising predetermined selection of entries from the load balancing table to load balance client requests across the servers. Kawata et al further teaches the selection is based on a round-robin fashion which selects in a sequential order (paragraph 67).

Claim 41 discloses the method of claim 37 further comprising load balancing client requests in accordance with the encoding. Kawata et al further teaches requests are distributed to the servers accordingly (paragraphs 66 and 67).

Claim 42 discloses the method of claim 37 further comprising randomly selecting entries from the load balancing structure to load balance client requests. Kawata et al further teaches the selection is based on a round robin or pseudo-random fashion (paragraph 67).

Claim 43 discloses the method of claim 37 wherein the sample requests include search requests, compare requests, and update requests. Kawata et al further teaches the service requests contain various content (paragraph 39).

Claim 44 discloses the method of claim 37 wherein the recorded data indicates one or more of number of sample requests serviced during the data collection interval by each of the directory servers, number of sample requests serviced during the data collection interval by each of the directory servers based on sample request type, time for each directory server to service a number of sample requests during the data collection interval, and time for each of the directory servers to service a number of sample requests based on type of sample requests during the data collection interval. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 45 discloses the method of claim 37 further comprising servicing client requests with a second plurality of servers during the data collection interval. Kawata et

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al further teaches another server processes requests while samples are processed (paragraph 72).

Claim 47 discloses the method of claim 37 executed by a computer processor reading a computer program product encoded in one or more machine-readable medium. Kawata et al further teaches the method is stored on computer readable medium (paragraph 104).

Claim 53 discloses a computer program product encoded on a machine-readable storage medium as one or more instructions executable by a computer processor, the computer program product comprising: a first sequence of instructions to transmit sample requests to a plurality of servers at intervals and receive responses corresponding thereto; a second sequence of instructions to determine proportional capability information for each of the plurality of servers that reflects proportional capabilities of each of the plurality of servers, the proportional capability being a ratio to the total capability of all the servers, based at least in part on the sample requests and corresponding responses; and a third sequence of instructions to encode the determined proportional capability of each of the plurality of servers into a representative encoding, wherein the representative encoding represents each of the plurality of servers in accordance with each server's determined proportional capability. Kawata et al shows test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach the proportional capability being a ratio to the total capability of all the servers encode the

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determined proportional capability of each of the plurality of servers into a representative encoding, wherein the representative encoding represents each of the plurality of servers in accordance with each server's determined proportional capability. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28) and randomly selects a server from the weighted distribution (paragraphs 29-32).

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 55 discloses the computer program product of claim 53 further comprising the third sequence of instructions to maintain the proportional server capability encoding for load balancing. Kawata et al further teaches the server information is updated as conditions change (paragraph 56).

Claim 56 discloses the computer program product of claim 53 further comprising a fourth sequence of instructions to load balance client requests in accordance with the proportional server capability encoding. Kawata et al further teaches requests are distributed to the servers accordingly (paragraphs 66 and 67).

Claim 58 discloses the computer program product of claim 56 further comprising the third sequence of instructions to forward client requests to standby servers during

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the intervals. Kawata et al further teaches another server processes requests while samples are processed (paragraph 72).

Claim 59 discloses the computer program product of claim 53 wherein the second sequence of instructions measures one or more of time for each of a plurality of servers to respond to each request, time for each of a plurality of servers to respond to each request based on request type, total number of responses provided by each of a plurality of servers during the periodic intervals, and number of responses provided by each of a plurality of servers based on request type. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 60 discloses a computer program product encoded on a machine-readable storage medium, the computer program product comprising: a first sequence of instructions to update a proportional server capability load balancing information encoding including indications for each server that reflect proportional measured sample request based capabilities of a plurality of servers, the reflection represented by relative occurrence of the indications for each server, wherein the proportional measured capabilities are measured during intervals; and a second sequence of instructions to select server indications from the proportional server capability load balancing information encoding to load balance client requests. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach the reflection represented by relative occurrence of the indications for each server. Schlangen teaches collecting the

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proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28).

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 62 discloses the computer program product of claim 60 further comprising a third sequence of instructions to forward client requests to standby servers while the first sequence of instructions updates the proportional server capability load balancing information encoding. Kawata et al further teaches another server processes requests while samples are processed (paragraph 72).

Claim 63 discloses the computer program product of claim 60 further comprising a third sequence of instructions to measure capabilities of the plurality of directory servers based at least in part on sample requests. Kawata et al further teaches test service packets are sent to servers which are processed and returned providing information to the load balancer (paragraphs 74-76, 82, and 83).

Claim 65 discloses the computer program product of claim 60 wherein the measured sample request based proportional capabilities include one or more of number of sample directory requests serviced during a time interval, number of sample directory requests serviced during a time interval based on type of sample requests,

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time to service a number of sample directory requests during a time interval, and time to service a number of sample directory requests based on type of sample requests during a time interval. Kawata et al further teaches the system measures the time to service a request (paragraph 74).

Claim 66 discloses the computer program product of claim 60 wherein the requests include directory requests Kawata et al further teaches the service requests contain various content (paragraph 39).

Claim 67 discloses a network comprising: a plurality of servers processing requests; and a computer readable storage media containing one or more routines executable by a computer processor, the routines including one or more load balancing routines forwarding client requests in accordance with a proportional server capability information encoding that proportionally indicates each of the plurality of servers in accordance with their proportional capability, wherein the proportional server capability information encoding is based at least in part on servicing of sample requests during intervals between forwarding of client requests. Kawata et al teaches a plurality of servers (figure 1, #107-109) and test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach encoding that proportionally indicates each of the plurality of servers in accordance with their proportional capability. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28).

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Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

Claim 68 discloses the network of claim 67 wherein the one or more load balancing routines measuring the capabilities of the plurality of servers during the intervals. Kawata et al further teaches a server is chosen based on the load status of the servers (paragraphs 66 and 67).

Claim 69 discloses the network of claim 68 wherein measuring includes transmitting the sample requests and receiving responses corresponding to the sample requests. Kawata et al further teaches test service packets are sent to servers which are processed and returned providing information to the load balancer (paragraphs 74-76, 82, and 83).

Claim 70 discloses the network of claim 67 further comprising one or more standby servers to handle client requests while the load balancer measures capabilities of the plurality of servers. Kawata et al further teaches another server processes requests while samples are processed (paragraph 72).

Claim 71 discloses a computer readable storage medium storing one or more routines executable by a computer processor, the execution of the one or more routines causing the computer processor to perform at least: collecting proportional server

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capability information for a plurality of servers, wherein the server capability information is based at least in part on processing of sample requests transmitted to the plurality of servers; encoding the server capability information in a weighted distribution, such that portions of the weighted distribution corresponding to each server occupy a portion of the distribution substantially equivalent to the proportional server capability of each of the servers; and selecting, from the weighted distribution, a server to process a client request. Kawata et al teaches test service packets are sent to servers which are processed and returned providing information to the load balancer to load balance requests from clients which is repeated throughout (paragraphs 74-76, 82, and 83). It fails to teach encoding the server capability information in a weighted distribution, such that portions of the weighted distribution corresponding to each server occupy a portion of the distribution substantially equivalent to the proportional server capability of each of the servers and selecting, from the weighted distribution, a server to process a client request. Schlangen teaches collecting the proportional information on the server's available resources and inputs it into a weighted distribution (paragraphs 16-28) and selects a server from the weighted distribution (paragraphs 29-32).

Kawata et al and Schlangen are analogous art because they are both related to load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the proportional information in a weighted distribution feature in Schlangen with the system in Kawata et al because a low cost resource selection method is provided (Schlangen, paragraph 6).

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Claim 72 discloses the computer readable storage medium of claim 71, wherein the proportional server capability information is, representative of the server capability of each server in comparison to the server capability of all the servers. Schlangen further teaches the collected information is in relation to the collected information from other servers (paragraphs 16-32).

Claim 73 discloses the computer readable storage medium of claim 71, wherein the server capability information is based at least in part on processing of a single set of sample requests transmitted to the plurality of servers. Kawata et al further teaches test service packets are sent to servers which are processed and returned providing information to the load balancer (paragraphs 74-76, 82, and 83).

Claim 74 discloses the computer readable storage medium of claim 71, wherein the sample requests are transmitted at regular intervals. Kawata et al teaches test service packets are sent to servers as intervals (paragraphs 74-76, 82, and 83).

Claim 75 discloses the computer readable storage medium of claim 71, wherein the selecting is done at random. Schlangen further teaches the selection is done randomly (paragraphs 29-32).

Claim 76 discloses the computer readable storage medium of claim 71, wherein the weighted distribution is an array, and wherein a proportionate portion of the array corresponds to each server in accordance with a given server's proportional server capability. Schlangen further teaches the collected information is in relation to the collected information from other servers (paragraphs 16-32).

Claims 7, 22, 31, 32, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al (US PG PUB US2002/0032777) in view of Schlangen (US PG PUB US2005/0091217) as applied to claim 1, 14, 29, and 63 above, and further in view of Leighton et al (US PG PUB US2002/0129134).

Claim 7 discloses the computer readable storage medium of claim 1 wherein the collecting of server capability information comprises transmitting the sample requests to the plurality of servers during the intervals and recording information that corresponds to the servers servicing of the sample requests. Kawata et al in view of Schlangen teaches the limitations of claim 1 as recited above. It fails to teach collecting of server capability information comprises transmitting the sample requests to the plurality of servers during the intervals and recording information that corresponds to the servers servicing of the sample request. Leighton et al teaches sending test requests to all the servers connected (paragraph 36).

Kawata et al in view of Schlangen and Leighton et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the test request distribution feature in Leighton et al with the system in Kawata et al in view of Schlangen because efficient mapping for load balancing is provided (Leighton, paragraph 6).

Claim 22 discloses the method of claim 14 wherein collecting backend server capability data comprises: transmitting the sample requests to the backend servers; and recording data that corresponds to servicing of the sample requests by the backend

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servers. Kawata et al in view of Schlangen teaches the limitations of claim 14 as recited above. It fails to teach transmitting the sample requests to the backend servers and recording data that corresponds to servicing of the sample requests by the backend servers. Leighton et al teaches sending test requests to all the servers connected (paragraph 36).

Kawata et al in view of Schlangen and Leighton et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the test request distribution feature in Leighton et al with the system in Kawata et al in view of Schlangen because efficient mapping for load balancing is provided (Leighton, paragraph 6).

Claim 31 discloses the method of claim 29 wherein maintaining the proportional server capability information encoding comprises: transmitting the sample requests to the plurality of servers at intervals; and recording the server capability information that indicates frequency of the sample requests serviced by the servers. Kawata et al in view of Schlangen teaches the limitations of claim 29 as recited above. It fails to teach transmitting the sample requests to the plurality of servers at intervals and recording the server capability information that indicates frequency of the sample requests serviced by the servers. Leighton et al teaches sending test requests to all the servers connected (paragraph 36).

Kawata et al in view of Schlangen and Leighton et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the test request distribution feature in Leighton et al with the system in Kawata et al in view of Schlangen because efficient mapping for load balancing is provided (Leighton, paragraph 6).

Claim 32 discloses the method of claim 31 wherein the sample requests include a mixture of configurable sample requests. Kawata et al further teaches the service requests contain various content (paragraph 39).

Claim 64 discloses the computer program product of claim 63 wherein the third sequence of instructions to measure capabilities comprises the third sequence of instructions to transmit the sample requests to the plurality of directory servers and to receive responses corresponding thereto during the intervals. Kawata et al in view of Schlangen teaches the limitations of claim 63 as recited above. It fails to teach the third sequence of instructions to measure capabilities comprises the third sequence of instructions to transmit the sample requests to the plurality of directory servers and to receive responses corresponding thereto during the intervals. Leighton et al teaches sending test requests to all the servers connected (paragraph 36).

Kawata et al in view of Schlangen and Leighton et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the test request distribution feature in Leighton et al with the system in Kawata et al in view of Schlangen because efficient mapping for load balancing is provided (Leighton, paragraph 6).

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Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al (US PG PUB US2002/0032777) in view of Schlangen (US PG PUB US2005/0091217) as applied to claim 10 above, and further in view of Coughlin (US PG PUB US2004/0024861).

Claim 11 discloses the computer readable storage medium of claim 10 wherein the one or more load balancing routines update the proportional server capability based load balancing encoding in response to a change in network configuration. Kawata et al in view of Schlangen teaches the limitations of claim 10 as recited above. It fails to teach updating the proportional server capability based load balancing encoding in response to a change in network configuration. Coughlin teaches the server list is updated due to server changes (paragraph 64).

Kawata et al in view of Schlangen and Coughlin are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the server list updating feature in Coughlin with the system in Kawata et al in view of Schlangen because the operational load on each server is able to be considered so overall performance is maximized (Coughlin, paragraph 1).

Claim 12 discloses the computer readable storage medium of claim 11 wherein the change of network configurations includes change of server availability. Coughlin further teaches the server list is updated when new servers are added (paragraph 64).

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Claim 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al (US PG PUB US2002/0032777) in view of Schlangen (US PG PUB US2005/0091217) as applied to claim 23 above, and further in view of Pruitt et al (US Patent #7,308,475).

Claim 24 discloses the method of claim 23 wherein the sample directory requests are in accordance with one or more protocol including lightweight data access protocol and universal description discovery and integration. Kawata et al in view of Schlangen teaches the limitations of claim 23 as recited above. It fails to teach the sample directory requests are in accordance with one or more protocol including lightweight data access protocol and universal description discovery and integration. Pruitt et al teaches the requests are transmitted according to universal description discovery and integration (column 7, lines 18-43).

Kawata et al in view of Schlangen and Pruitt et al are analogous art because they are both related to network resource sharing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the request feature in Pruitt et al with the system in Kawata et al in view of Schlangen because a standard protocol for providing the location of a requested service is provided (Pruitt, column 1, lines 11-24).

Claims 46, 57, and 61 rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al (US PG PUB US2002/0032777) in view of Schlangen (US PG PUB US2005/0091217) as applied to claims 37, 56, and 60 above, and further in view of Shabtay et al (US PG PUB US2002/0120743).

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Claim 46 discloses the method of claim 37 further comprising buffering client requests during the data collection interval. Kawata et al teaches the limitations of claim 37 as recited above. It fails to teach buffering client requests during the data collection interval. Shabtay et al teaches buffering request packets (paragraph 64).

Kawata et al in view of Schlangen and Shabtay et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the request buffer feature in Shabtay et al with the system in Kawata et al in view of Schlangen because additional information regarding the balancing decision is able to be obtained (Shabtay, paragraph 64).

Claim 57 discloses the computer program product of claim 56 further comprising a fifth sequence of instructions to buffer client requests during the intervals. Kawata et al teaches the limitations of claim 56 as recited above. It fails to teach a fifth sequence of instructions to buffer client requests during the intervals. Shabtay et al teaches buffering request packets (paragraph 64).

Kawata et al in view of Schlangen and Shabtay et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the request buffer feature in Shabtay et al with the system in Kawata et al in view of Schlangen because additional information regarding the balancing decision is able to be obtained (Shabtay, paragraph 64).

Claim 61 discloses the computer program product of claim 60 further comprising a third sequence of instructions to buffer client requests While the first sequence of instructions updates the proportional server capability load balancing information encoding. Kawata et al teaches the limitations of claim 60 as recited above. It fails to teach a third sequence of instructions to buffer client requests While the first sequence of instructions updates the proportional server capability load balancing information encoding. Shabtay et al teaches buffering request packets (paragraph 64).

Kawata et al in view of Schlangen and Shabtay et al are analogous art because they are both related to network load balancing.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the request buffer feature in Shabtay et al with the system in Kawata et al in view of Schlangen because additional information regarding the balancing decision is able to be obtained (Shabtay, paragraph 64).

Response to Arguments

Applicant's arguments with respect to claims 1, 14, 26, 37, 53, 60, and 67 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bhat et al (US PG PUB US2003/0037093) teaches load balancing in a multiprocessor system.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Gillis whose telephone number is (571)272-7952. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Examiner
Art Unit 2441

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